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November 22, 2010

Ms. Lynda Deshambault
Remedial Project Manager
U.S. Environmental Project Manager Agency-Region IX
75 Hawthrone Street (SFD-7-1)
San Francisco, CA 94105

Re: Formal Response to the US Environmental Protection Agency August 2010 Proposed Plan for Operable Unit 2 Regional Groundwater

Dear Ms. Deschambault:

The enclosed document has been prepared on behalf of the Omega Chemical Site PRP Group (OPOG) as a formal response to the US Environmental Protection Agency (EPA) August 2010 Proposed Plan for Operable Unit 2 (OU-2) Regional Groundwater. The members of OPOG and their consultants, CDM and de maximis, have been intimately involved in the Omega Chemical Superfund Site Operable Unit 1 (OU-1) for many years. As related to OU-2, OPOG and their consultants carefully reviewed and have been very critical of the draft March 2009 OU-2 Remedial Investigation/Feasibility Study (RI/FS), OU-2 groundwater modeling, and the updated August 2010 OU-2 RI/FS. In fact, OPOG has been expressing its OU-2 concerns to EPA since early 2009 and formally documented these concerns in a letter to Kathleen Salyer dated October 15, 2009 and a letter to the National Remedy Review Board dated February 2, 2010. OPOG is now taking the opportunity to further express our concerns by formally providing the enclosed detailed comment letter to EPA's August 2010 Proposed Plan for OU-2 Regional Groundwater. In brief, the following summarizes OPOG's major concerns with EPA's Proposed Plan:

- EPA is proposing to install an extremely expensive pump and treat (P&T) system to contain a 4.5 mile long plume of contaminated groundwater that has been, and is being, contaminated by many sources. OPOG is concerned that the proposed remedy is premature in light of the fact that the majority of the known sources to the regional groundwater plume are continuing unabated. With no source control measures being undertaken to control the other potential major sources, the proposed P&T system will be ineffective in treating low concentration groundwater as it continues to drawdown more contaminated water from the unabated sources;

- EPA indicates that State agencies (DTSC and LARWQCB) will address contaminant source areas within the OU-2 regional plume. Given's the State's current financial situation and the fact there is no funding to DTSC and LARWQCB, there is no basis to believe that the State agencies will address these resources in a reasonable timeframe. EPA's plan provides no evidence of established plans and resources to do so. Even the National Remedy Review Board in their review of the proposed remedy expressed repeated concern that not enough was being done to identify and isolate sources within the plume;

- EPA's proposed plan includes an expensive component of extraction at the "toe" of the plume. OPOG is concerned that proposed extraction at the toe of the plume will be inefficient and may not be necessary due to low concentrations of VOC's in groundwater in this area and grossly overstated rates of contaminant migration. Also, if "toe" of the plume extraction is deemed necessary, it is not clear to OPOG if existing water company wells could be utilized, which could dramatically reduce costs;

- EPA has not adequately evaluated whether or how the 3 million gallons of water produced every day by the proposed P&T system can be disposed of, but has proposed a plan that simply assumes that the local water purveyors will readily accept the treated water. Neither the proposed plan nor the RI and FS provide support for this assumption;

- EPA's OU2 RI/FS has identified additional sites as potential sources of VOC's to the regional groundwater plume; however, it appears that EPA has not included these sites as participants in the remedy. OPOG is concerned that in addition to the potential sources identified in the OU2 RI/FS, there are numerous other potential sources within and in the vicinity of the OU2 plume boundary that could be identified. OPOG feels that the proposed remedy will not be successful until all potential sources are identified and that EPA should complete this work in advance of the OU-2 remedy. In its comments OPOG identified several additional sources that have not been examined by EPA;

Finally, OPOG strenuously objects to EPA's repeated attribution of the entire geographic extent of the OU2 plume being from Freon contaminant releases at the Omega property. While Omega was one such source, located at the upgradient end of the plume, OPOG has supplied EPA with detailed technical evidence which shows that any contamination from Omega could not have migrated the 4.5 mile plume length. Specific examples and references to other Freon sources are provided in the enclosed detailed response letter.

OPOG encourages EPA to review the attached comments and provide the necessary modification and/or technical rationale to support the feasibility of the Proposed Plan.

At your earliest convenience, OPOG representatives request an opportunity to review the comments presented herein and the attachments, at an in person meeting with yourself and EPA management.

Should you have any questions, regarding the above, please contact me.

Sincerely,
Omega Chemical Site PRP Organized Group

Edward Modiano
Project Coordinator

cc: Kathleen Salyer, USEPA
Dustin Minor, ORC, USEPA
Stephen Berninger, ORC, USEPA
Frederick Schauffler, USEPA

Comments on EPA's August 2010 Proposed Plan for Operable Unit 2 Regional Groundwater

The following comments are submitted on behalf of the Omega Chemical PRP Organized Group (OPOG) in response to the US Environmental Protection Agency (EPA) August 2010 Proposed Plan for Operable Unit 2 (OU-2) Regional Groundwater. OPOG's specific comments are summarized first and then further details are provided.

- The implementation of a containment remedy for the Regional plume is arbitrary and capricious, and inappropriate and inconsistent with EPA's own guidance, in light of the fact that the majority of sources to the Regional plume are continuing unabated. In order for the Proposed Plan's remedy to be successful, is it essential to implement source control measures first;

- The Proposed Plan's remedy includes extraction and treatment at the leading edge or "toe" of the Regional plume, which is wholly unnecessary. The remedy is likely to fail if other sources are not addressed;

- The Feasibility Study (FS), upon which the Proposed Plan is based, failed to analyze the implementability of the selected remedy. Under CERCLA, evaluation of this parameter is required before a remedy can be selected;

- The Remedial Investigation (RI) and FS failed to identify a significant number of potential source facilities throughout the footprint of the Regional plume, which is fatal to the success of the remedy. Source control is essential for the remedy as measured by the Remedial Action Objectives, and source control is not occurring at nearly all facilities that have or still are contributing contamination to the Regional plume;

- The Proposed Plan perpetuates the flawed science of the RI and FS, which inaccurately and inappropriately refers to the Omega Chemical Site as the source attributable for the full geographic extent of the Regional plume.

Detailed Discussion

1. The absence of adequate source control throughout the footprint of the Regional plume is a fatal flaw to the success of the selected remedy.

EPA's Remedial Action Objective (RAO) #3 in the OU2 FS states that the selected remedy should "*Decrease lateral and vertical migration of groundwater with high concentrations of COCs into zones with currently lower concentrations of COC's"*. The selected remedy is wholly deficient at meeting this RAO. The most striking examples of source areas where high concentrations of COCs can migrate into zones with lower concentrations exist immediately down-gradient of approximately two dozen individual source facilities that were identified in Sections 5.4 and 5.5 of the RI. Yet, the selected

remedial alternative neglects to address any of these contaminant source areas, thus ignoring one of the most important RAO's. Source control, as discussed herein, must include local capture of groundwater contamination (at a minimum), and should also include mass removal on the specific sites as well. EPA's response to this issue has consistently been that the State will address these contaminant sources. Specifically, pages 4 and 5 of the Proposed Plan state "*EPA will work with the State to identify significant sources within the OU-2 plume that have contributed to the groundwater contamination. Some of the known sources are being addressed by State-led actions. EPA expects that the rest of the sources will be addressed by the combined efforts of the State and EPA.*" These statements are wholly inconsistent with the fact that the State (DTSC and the LARWQCB) have no established plans to complete this work, nor do they have the technical or financial resources to do so. In its memorandum to Jane Diamond (Region 9 Superfund Director) dated April 12, 2010, EPA's own National Remedy Review Board (NRRB) states "*the source areas overlying the OU-2 plume, most of which are being handled under State cleanup authority, have not been fully addressed. It appears that the State currently has not presented a comprehensive timeframe for fully controlling all the sources contributing to the plume being addressed by this interim action.*" Of the approximate two dozen sites identified in the RI, only two are undergoing active groundwater remediation, in which the effectiveness of these existing extraction systems at containing all of the contaminant mass migrating from those facilities is uncertain. Only the Omega Property source control actions are providing full containment.

2. The need for containment at the toe of the plume has not been demonstrated.

There are four fundamental concerns relating to EPA's plan to implement leading-edge pumping at the tow of the plume. First, as the NRRB's Memorandum states, "*The Board recommends that the Region....present additional information that clarifies the protectiveness achieved with leading-edge pumping as opposed to pumping only at locations immediately down-gradient of the two major hot spots*." In its July 6 response to this NRRB comment, Region 9 justifies the need for leading-edge pumping by asserting that pumping from just mid-plume areas will not decrease the VOC concentrations. But the reason that such pumping will not work is because there is NO source control measure planned throughout the OU-2 plume (see issue 1, above). Second, EPA has expressed a sense of urgency to complete the remedy. In the August 31 Public Meeting, the EPA RPM responded to a question from the audience by stating that leading-edge pumping was needed because the plume was moving very fast, at "*540 feet per year*" (see also Section 1.6.1 of the FS, and sections 6.3.1.3 and 6.6.3.1 of the RI). As noted in OPOG's detailed comment letter submitted to the NRRB on February 2, 2010 and in OPOG's October 15, 2009 letter to Kathleen Salyer, Branch Chief, Region 9 EPA (Attachments 1 and 2) and as discussed further in issue 5 below, this alleged migration rate is wholly inaccurate and grossly overstates the rate of contaminant migration.

Third, as described in section 4.6 of the RI report, there are several water supply wells operated by the Golden State Water Company (GSWC) at the toe of the plume, and an

associated treatment plant. The FS states that the value of these wells to assist in providing any necessary containment is uncertain, owing to purported unknowns about whether they are at the appropriate depth and location. However, there is no indication that any quantitative efforts (e.g. use of the FS FEFLOW groundwater model) have been undertaken to address these uncertainties. If these wells are found to be effective at controlling plume migration, continued pumping with well-head treatment will provide a cost-effective alternative to the Proposed Plan.

Fourth, the contaminant concentrations at the toe of the plume are very low, e.g. only very slightly above the MCL for the primary constituent, PCE. Yet, EPA is proposing a remedy component at this location with costs greater than $10,000,000. Sound science demonstrates that it is not cost effective to treat such low concentrations, as natural attenuation will reduce the contaminant concentrations to considerably less than MCLs, particularly when sources are controlled and existing proximal water supply wells are already protected with well-head treatment.

3. EPA's Feasibility Study and Proposed Plan ignore the issue of water rights. Although the FS and Proposed plan acknowledge the need to coordinate with local water purveyors on the highly complex issue of water rights, the documents are completely silent as to how this process will occur and what would be the outcome of the coordination efforts. The water rights issues are essential to implementation of the remedy, however EPA has failed to conduct any of the "up front" analysis necessary to complete an evaluation of this key aspect of the proposed remedy. In addition, an analysis of the potential for Replenishment Costs to be incurred by the implementing party is absent from both documents. If Replenishment Costs were to be incurred, then the overall costs of the OU-2 remedy would significantly increase. In accordance with CERCLA remedy selection requirements, the FS and the Proposed Plan are required to address these costs, including an evaluation of all treated water end use alternatives. Alternatives that return the extracted and treated groundwater, with no consumptive use, back into the basin (e.g. Alternatives 4 and 5) may prove to be considerably more appropriate and cost effective than Alternative 6.

4. EPA did not evaluate or consider additional facilities that are potential sources of contaminants to the plume.

The RI and FS identify more than a dozen additional sites that are <u>potential sources</u> of VOCs to the plume. EPA has apparently used two criteria to identify potential sources: (i) the type of operations at each facility, including the types and volumes of chemicals used, and (ii) the documented presence of chemical contamination in underlying soils and groundwater. This approach is fundamentally flawed. If facilities meet both of the criteria above, these sites must be considered <u>documented sources</u> or, at a minimum, <u>probable sources</u>. Given the industrialized nature of the Santa Fe Springs area, there are likely dozens of additional sources, but EPA elected not to pursue sites where no subsurface data are available, regardless of chemical handling activities that have occurred. Accordingly, OPOG has initiated its own investigation into other potential sources. Preliminary results indicate that there are indeed numerous other

industrial/commercial operations in the area that used and disposed of chlorinated solvents that represent potential sources. As noted previously, the selected OU-2 remedy will not be successful, and will not meet RAO 3, without delineation and control of all sources. It is imperative, therefore, that EPA complete the work that needs to be done to support the selection and eventual implementation of an OU-2 remedy.

5. EPA's repeated attribution of the entire geographic extent of the OU-2 plume to contaminant releases from the Omega property is factually inaccurate. On Page 2 of the Proposed Plan, EPA states that "*OU-2 addresses the contaminated groundwater down-gradient of OU-1 that has been impacted by contamination from the Omega facility"*. Additionally, in the Public Meeting for the Proposed Plan on August 31, EPA representatives consistently referred to the entire OU-2 plume as "*the Omega plume*". Per previous comments provided to EPA by OPOG in the multiple forums discussed above, these statements and conclusions are based on seriously flawed science (Attachments 1 and 2). EPA has justified these conclusions on essentially one assumption – that the Property is the only known source of the Freon compounds observed at the toe of the plume and, therefore, the toe of the plume must represent a realistic maximum extent of contaminant migration from the Property. The FS used the FEFLOW groundwater model to justify this assumption. For at least three reasons, these conclusions are not correct. First, the model assumed that contaminants were released at the Property immediately upon commencement of operations in 1976 (although no evidence of this exists), and such releases instantaneously were transported up to 75 feet downward through the vadose zone which is dominated by fine grained materials. The latter assumption is essentially impossible and, at a minimum, wholly unsupported by any data. Second, the model assumed that specific Omega Site contaminants (notably, PCE and Freons) were transported 4.5 miles at the same rate as groundwater flow. This is contrary to scientific knowledge gained from hundreds of VOC sites, given that the these compounds are retarded in groundwater to a significant extent, such that their transport rates are likely in the range of 1/3 to 2/3 the rate of groundwater flow.

Third, EPA's efforts to identify other Freon sources have been completely inadequate. OPOG has identified at least four significant users of Freons and off-site shipment of Freon wastes: Cal Air, McKesson, Eastman Kodak and Chrysler Nu-Car Prep. Two of these sites include soil and groundwater contamination demonstrating that releases of Freons have occurred (McKesson and Chrysler Nu-Car Prep). Groundwater investigations are ongoing at a third site (Eastman Kodak), and the fourth site has not been required to implement any subsurface investigation (Cal Air). More specific information on each site is provided as follows:

- Cal Air – OPOG understands that, based on 104(e) submittals, EPA has concluded that the former Cal Air facility at 12484 E. Whittier Blvd. did not use Freons, but rather only manufactured heating ducts and related HVAC materials. This conclusion, however, is wholly inconsistent with L.A. Fire Department HazMat files which demonstrate very large volumes of Freon liquids being used and stored on the facility. EPA has inappropriately failed to require any subsurface investigations on this

property, which would likely prove that it is also a source of Freon contamination to groundwater.

- McKesson – Per previous comments by OPOG to the NRRB, high levels of Freon 11 and 113 have been observed in groundwater beneath the McKesson site, commencing in 1986. Additionally, soil and soil vapor data from 1990 and 1991 show the presence of Freon in the vadose zone. In Section 5.5.1.6 of the Final RI, EPA expresses concerns regarding the accuracy of these data; however, EPA's statement that "*(t)he results are neither accurate nor precise and cannot be relied upon as quantitative*" is clearly subjective speculation, without supporting facts. OPOG's independent review of the data has identified no quality control concerns nor caveats or qualifiers on the data; in short, there is no apparent reason to question the legitimacy of the data to demonstrate the presence of Freon beneath the property for at least 24 years. Additionally, as previously commented, manifests demonstrate that McKesson was a user of Freon, and the groundwater data from 1986 makes it scientifically impossible for the detections to be attributable to the Property.

- Eastman Kodak - This facility, located over the heart of the Regional plume near the intersection of Byron Street and Sorenson Avenue, is also a documented user of Freons, including shipment of Freon wastes to the Omega facility. OPOG understands that, after years of delay, groundwater investigations at the facility are very recently underway, but pertinent data are not yet available.

- Chrysler Nu-Car Prep – This facility, also located over the heart of the Regional plume, also has documented use of Freons. Additionally, there are considerable soil, soil vapor and groundwater data which demonstrate a substantial and long-term presence of Freons in both media. Section 5.5.1.7 of the Final RI references this site (as "Site A"); notes the presence of Freon 11 in groundwater twenty years ago at a concentration of 370 ug/l, but fails to mention either the presence of Freon in shallow soil vapor or the highest groundwater concentration of 1,200 ug/l of Freon 113. As previously stated in OPOG's comments to the NRRB, these data demonstrate that this facility is a source of Freons.

In addition to the four sites discussed briefly above, Site L from EPA's RI (Section 5.5.3.1) is clearly a source of Freon releases to the subsurface, as evidenced by the significantly high soil vapor levels of Freon 11 and detectable levels of Freon 113. EPA appropriately concludes this section of the RI by stating that additional groundwater sampling "*would be necessary to determine whether or not Freons…have impacted groundwater*." Yet EPA has repeatedly published erroneous reports and informed the public that the Omega Site is the only known source of Freons, without undertaking the recommended groundwater sampling.

In a technical meeting on August 31, 2009, EPA provided OPOG with an update on the agency's limited efforts to identify other potential Freon sources. Explicit assurances were also provided that such work was ongoing. Unfortunately, OPOG understands that no additional work in this regard has actually been completed. In short, EPA efforts to identify other Freon sources have been inadequate at best, and EPA's oral and written statements to the public that the extent of the Regional plume is attributable to the Property are contradicted by a considerable volume of data.

There is additional supporting information regarding the limited extent of Omega-derived contamination based on the distribution of 1,4-dioxane in groundwater down-gradient of the Property. Whereas VOCs and Freon are retarded to various degrees in groundwater transport, 1,4-dioxane migrates at the same velocity as groundwater. As such, it is typically easier to estimate the source and rate of migration for this compound. Although additional sources of 1,4-dioxane certainly exist in down-gradient portions of the Regional plume (as cited in the EPA's RI), there is a clear distinction between such other sources and the Omega Site, as shown in Figure 5-16 of EPA's RI report, where it appears that Omega-related 1,4-dioxane has migrated approximately one mile from the Property. This is as expected for the following reasons. First the Omega-related source for 1,4-dioxane is established: Interviews with past Omega employees confirm that (a) 1,1,1-TCA (the primary solvent in which 1,4-dioxane is a nearly ubiquitous additive) was the highest volume VOC handled at the site from commencement of operations in 1976, and (b) small quantities of 1,4-dioxane were actively used at the site as far back as 1981. Second, based on OPOG-estimates presented in the 2/2/10 Memo to the RRB for initial groundwater impact (early 1980s) and average groundwater flow (~250 feet per year), the extent of the Property-related 1,4-dioxane plume (considering un-retarded transport) is approximately one mile.

ATTACHMENT 1

National Remedy Review Board Letter

OPOG Comments to the Draft EPA Region 9 Feasibility Study (FS) Report,

Omega Chemical Superfund Site, Operable Unit 2 (OU-2)

Dated February 2, 2010

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OPOG TRANSMITTAL

TO: NRRB BOARD MEMBERS

FROM: Edward Modiano, Project Coordinator on behalf of OPOG

DATE: February 2, 2010

SUBJECT: OPOG Comments to the Draft EPA Region 9 Feasibility Study (FS) Report, Omega Chemical Superfund Site, Operable Unit 2 (OU-2)

VIA: FED-X

As Project Coordinator on behalf of OPOG, enclosed for your review in advance of the February 11th NRRB meeting is a nine page document that provides comments to the EPA Region 9 Draft FS Report for OU-2 at the Omega Chemical Superfund Site. As a potential stakeholder, OPOG is submitting this document as prepared by Camp, Dresser & Mckee (CDM) to summarize OPOG's key concerns with the draft OU-2 FS.

OPOG requests that the NRRB sincerely consider the attached information in advance of any decision making regarding the EPA proposed OU-2 remedial alternatives.

Overview

On behalf of the Omega Chemical Site PRP Organized Group (OPOG), this document has been prepared by Camp Dresser & McKee Inc. (CDM) and provides comments on the Operable Unit 2 (OU2) Feasibility Study (FS) dated January 2010, and received by OPOG on January 18. OPOG has had only a short time for review, but in light of the U.S. Environmental Protection Agency (EPA) Remedy Review Board meeting scheduled for February 11, 2010, this document has been prepared for submittal in advance of the meeting. Upon further in-depth review of the FS, OPOG may have further comments. In addition, OPOG is still waiting for additional clarifying information regarding the groundwater model used by EPA and its contractor to support the OU2 FS. Additional comments may be submitted after receipt of that information.

Our comments are summarized as follows:

- One of EPA's most fundamental assumptions in both the Remedial Investigation (RI) and FS reports is that the full extent of the OU2 plume is attributable to the Omega facility, owing to an alleged absence of any other Freon sources. For example, Section 1.5 of the FS states that "*the former Omega facility is the only known source of Freons*". This statement is directly contradicted by two facts: (1) the presence of high levels of Freon 113 (500 micrograms per liter [µg/L]) and Freon 11 (460 µg/L) detected in groundwater beneath the McKesson facility in the mid-1980s and early 1990s, and (2) EPA Region 9 files include a 1985 manifest from the McKesson facility as the source of over 600 gallons of Freon-containing wastes, indicating that the McKesson facility, which is downgradient of the Omega facility, used large amounts of Freon at its facility and generated Freon-containing wastes.

- The currently defined OU2 plume is recognized by all parties, including EPA, as being comprised of contaminant releases from multiple source facilities. Our analysis of both contaminant transport rates and Freon generators demonstrates that the portion of the plume that is attributable to the Omega National Priorities List (NPL) site is approximately 1.0 to 1.5 miles in horizontal extent. The downgradient portion of the plume, estimated to be an additional 3.0 to 3.5 miles by EPA's RI and FS reports, is the result of contamination from several facilities in Sante Fe Springs referred to as the "AMK Area" in the RI report. Acknowledgment of this contaminant distribution in the FS will allow remedial options to be focused more appropriately, and include source control measures at the identified source facilities.

- EPA's calculations with respect to contaminant transport, based on the FEFLOW model, incorrectly assumed that contaminants were instantaneously transported to groundwater through a 75-foot thick low permeability vadose zone. Our calculations show that this is an inappropriate assumption. Furthermore, EPA's analysis assumes that releases at the Omega facility occurred immediately upon commencement of facility operations in 1976, even though there are no data to support such an assumption.

- The FS should include a thorough evaluation of variable locations for groundwater extraction rather than three general locations common to all alternatives. This evaluation should include (a) assessment of the effectiveness of well-head treatment at the downgradient toe of the contaminated groundwater, and (b) quantitative evaluation of the value and effectiveness of extraction in the mid-plume and upgradient areas.

- The FS should include a thorough evaluation of groundwater source control. Specifically, to meet RAO 3 and be consistent with both the NCP and applicable EPA guidance, active groundwater remediation should be considered at each of the major sources of VOCs in groundwater.

On October 15, 2009, the above concerns were summarized in a letter from Mr. Edward Modiano (OPOG Project Coordinator) to Ms. Kathleen Salyer (EPA Region 9 Branch Chief). On January 22, 2010, during the preparation of this submittal to the Remedy Review Board, OPOG received EPA's response (dated January 21, 2010) to OPOG's letter. OPOG believes that EPA's letter fails to respond to our concerns, and in some instances is factually and technically inaccurate. To the extent practical, and in a limited manner given the short time constraint, the following detailed comments address some of these concerns. OPOG expects to provide a complete response to EPA's January 21 letter under separate cover in the near future.

Detailed Comments

1.0 Relevant Guidance for Remedy Selection

The Omega Chemical Site PRP Organized Group's (OPOG's) comments reflect our review of the March 2009 Operable Unit 2 (OU2) Remedial Investigation (RI) Report, as well as our familiarity with Section 121 of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the following regulations and guidance document:

- The National Oil and Hazardous Substances Pollution Contingency Plan (NCP)
- Guidance for Conducting RI and Feasibility Study (FS) under CERCLA (U.S. Environmental Protection Agency [EPA] October 1988)
- Guidance on Remedial Actions for Contaminated Groundwater at Superfund Sites (EPA December 1988)

The FS was received on January 18, and there was insufficient time for a full review of the document before submitting these comments. As noted in the overview, additional comments may be submitted by OPOG once a complete review has been completed.

2.0 Remedial Action Objectives

From our limited review of the FS, we understand that four of the five active Alternatives call for groundwater extraction and treatment at three general locations within the currently defined boundaries of OU2. The fifth active Alternative (No. 2) calls for extraction only at the toe of the regional plume. The only variability among the Alternatives is the proposed end use of the water. The Alternatives were evaluated against the following three Remedial Action Objectives (RAOs) in EPA FS:

1. Prevent unacceptable human exposure to groundwater contaminated by chemicals of concern (COCs).
2. Decrease lateral and vertical spreading of COCs in groundwater at OU2 to protect current and future uses of groundwater.

3. Decrease lateral and vertical migration of groundwater with high concentrations of COCs into zones with currently lower concentrations of COCs to optimize the treatment of extracted groundwater.

OPOG's comments are provided below.

3.0 Key Concerns

OPOG has the following key concerns with the OU2 FS:

- There is insufficient variability among the Alternatives being considered to allow a complete and thorough evaluation of all remedial options. As a result, the FS does not comply with the requirements of EPA FS Guidance nor the NCP. As the most striking example, the Alternatives discussed in the FS do not include source control, as required by EPA guidance. As a result, the remedies being considered do not meet RAO 2 or 3 in an effective and efficient manner.
- The depiction and characterization of groundwater contamination presented in the RI and FS reports is based on two groundwater models with very different hydraulic property sets in the site area and inadequate review of historical contaminant data. Insufficient explanation has been provided to date to reconcile how these models generate similar results. Based on our calculations, the majority of the groundwater plume depicted in the RI and FS reports has no derivation from the Omega Site. As a result, it appears to us that the FS proposes and evaluates Alternatives that are in large part unrelated to the Omega NPL site purportedly being addressed.

These concerns were initially summarized in the October 15, 2009 letter from Mr. Modiano to Ms. Salyer, as noted in the overview section of this document. To the extent applicable, this document also addresses EPA's responses in the January 21 letter. Additionally, the overview section of this document also noted that OPOG has several remaining significant concerns with EPA's letter and plans to provide a formal and complete response in the near future.

3.1 Insufficient Array of Alternatives and Absence of Source Control

OPOG understands that the primary objective of the remedy is containment, yet four of the five active Alternatives evaluated in Section 4 of the FS include a single, common approach to containment – groundwater extraction and treatment at three general locations within groundwater contamination plume that extends approximately 4.5 miles in the currently defined OU2, aka "the Whittier/Santa Fe Springs plume." There are certainly many different means of containment, and the FS fails to provide any evaluation of such options.

As a first specific example, the FS should evaluate different or a reduced number of locations for regional pumping. Extraction at the toe of the Whittier/Santa Fe Springs plume is understandable, as it assists in meeting all three of the RAOs in the long term. However, the FS fails to evaluate the effectiveness of well-head treatment from existing supply wells in this area for containment. Conversely, extraction in the middle and upgradient reaches of this regional groundwater contamination appears to do very little to meet RAOs 2 and 3.

As a second specific example, none of the Alternatives include controlling ongoing sources of mass migration into the regional plume. EPA's RI report includes a description of approximately a dozen sites within the currently defined footprint of the Whittier/Santa Fe Springs plume, and OPOG understands that

EPA is continuing to evaluate other potential source areas. Section 4 of the RI discusses several of the sites other than the Omega NPL site that are clearly substantial, documented, and ongoing sources of contaminant mass to groundwater, with onsite groundwater concentrations in the tens to hundreds of thousands of µg/L). Section 3.2.2 of EPA's Guidance on Remedial Actions for Contaminated Groundwater at Superfund sites states "*Groundwater remedial actions cannot be evaluated without considering source control actions, because source control actions generally contribute to groundwater restoration*" and "*A groundwater action implemented before a source control action is selected should be based on an analysis of the range of source control actions and their effects on groundwater remediation*." No such analysis of source control actions at the multiple facilities that are continuing to contribute contaminant mass to the OU2 plume has been performed.

Thus, the proposed remedial alternatives are both inconsistent with EPA's guidance and fail to meet RAOs 2 and 3. Additionally, Section 4.1.3.2 of EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA states "*For aquifers currently being used as a drinking water source, alternatives should be configured that would achieve ARARs or risk-based levels as rapidly as possible*." The absence of groundwater source control measures will result in the OU2 remedy being a perpetual and everlasting action, contrary to CERCLA's and the NCP's overwhelming preference for permanent remedies.

OPOG discussed this concern with EPA Region 9 staff on several occasions in 2009, and Regional staff has assured OPOG that they are working closely with the State of California to address this concern. Unfortunately, both history and large-basin CERCLA precedents in the Los Angeles metropolitan area suggest that EPA's coordination with the State, although encouraged, is very unlikely to result in any substantive benefits to the proposed OU2 remedy in a reasonable time frame. First, the presence of substantial groundwater contamination under many of these State-lead sites has been known for 10 to 20 years or more, and yet no source control actions have been implemented. In fact, for several sites there have been no actions or any further characterization for more than 15 years. Second, two nearby large commingled plume NPL sites – the San Fernando and San Gabriel basins – are striking examples where the initiation of basin-wide CERCLA activities substantially, and potentially permanently, reduced the focus of the State agencies on individual contaminant source sites. There is no reason to believe that the State will take different steps to control the sources of contamination to the Whittier/ Sante Fe Springs groundwater plume. The result of reductions in funding and staffing at all levels of the Los Angeles Regional Water Quality Control Board (LARWQCB) and California Department of Toxic Substances Control (DTSC) is that these agencies do not have the resources for further work in this area.

EPA's January 21, 2010 letter states that "*It is possible that future EPA response actions of the OU2 plume could include source control actions, but it is premature to include them at this time*." This statement is very troubling to OPOG for two reasons. First, EPA has not committed to implement the clearly necessary source control actions. Second, the concept that it is "*premature*" to include source control actions before implementing a regional groundwater remedy is scientifically backwards. In the absence of any imminent threat to human health (in Section 1.7.1, the FS states that "*the OU2 groundwater does not pose a current or immediate risk to human health due to the absence of a complete exposure pathway*"), the most scientifically defensible approach would be to implement the source control action(s) first to mitigate the substantial continuing contribution of contaminant mass to the regional groundwater, and then implement any necessary regional groundwater action to address the residual contamination therein before it would pose a potential future threat to human health.

OPOG strongly recommends, therefore, that the FS be revised to include one or more Alternatives that focus heavily on groundwater source control at individual sites that are contributing substantial mass to

the Whittier/Santa Fe Springs groundwater plume. A critical first step to facilitate this evaluation is scientifically supportable analyses of the fate and transport of contaminants within this plume, as described below.

3.2 Inaccurate Basis for Plume Delineation

The OU2 RI report concluded that the entire geographic extent of a 4.5 mile long plume of contamination downgradient from the Omega Site is attributable to the releases from the Omega property. EPA drew the boundaries of OU2 accordingly, and the FS focuses on Alternatives intended to address the full extent of groundwater contamination, without controlling the multiple sources responsible for this distribution of contaminants. From conversations with EPA Region 9 staff during June and August of 2009, OPOG understands that the delineation of the OU2 area and attribution of the full extent of contamination to releases on the Omega property was predicated on two basic assumptions: (1) quantitative evaluation of contaminant transport (notably, the FEFLOW groundwater models used for the RI and FS) demonstrated that such transport distances were reasonable, and (2) that the Omega property was the only known source of Freon 11 and Freon 113 to groundwater. Neither of these assumptions is accurate.

With respect to contaminant transport, the FEFLOW model assumed that releases to the ground surface occurred immediately upon commencement of Omega's operations at the facility in 1976, and that such hypothetical releases to the ground surface were instantaneously transported through a 75-foot thick low permeability vadose zone to groundwater. There is no evidence to support the former, and the latter is not appropriate. Furthermore, the FEFLOW model discussed in the RI then assumes that the downgradient transport of contaminants in groundwater occurred at the same rate as groundwater flow (i.e., no sorption or degradation of the contaminants occurred).There is also inconsistency in the documentation of whether retardation was applied in the FEFLOW model used for the FS. Section 1.6.1 of the FS states that the estimated transport rate "*includes the combined effects of advection, sorption, dispersion, and degradation*." However, this statement is directly contradicted in Section A.4.1 of Appendix A to the FS, wherein it is stated that "*Sorption of contaminants onto sediment surfaces and degradation of contaminants were not simulated by the transport models for OU2*." The FS estimates a transport rate of 540 feet per year (ft/yr), generally consistent with the RI estimates and approximately twice the rate that is realistic based on all OU2 data (see Section 4.2 of this document).

With respect to the origins of Freon in the Whittier/Santa Fe Springs plume, there are current and historical data that clearly demonstrate that other sources exist downgradient of the Omega property. Some of these data are already noted in the RI report (e.g., Section 5.5.1.6), and some – particularly historical groundwater samples from the 1980s – are not discussed in the RI report. Section 4.3 of this document discusses these data further.

OPOG fully understands that an inaccurate basis for plume definition, and our comments thereon, will have a significant impact on future allocation of liability for the currently-defined OU2 plume. We emphasize, however, that this is <u>not</u> our intent in this document. Instead, our intent is to highlight the opportunity for EPA to establish a separate set of Alternatives for the upgradient portion of the currently defined OU2 plume (i.e., the part that is actually attributable to the Omega CERCLA site) and the downgradient areas where many other facility sources are continuing to transport high levels of contamination into areas with much lower concentrations. In short, the appropriate bifurcation of the currently depicted OU2 contamination area would allow EPA to meet all of the RAOs in a more efficient manner; reduce the mobility and volume of groundwater contaminants; and expedite the effectiveness of the selected remedy.

Because of the importance of accurately characterizing the real extent of Omega-derived contamination, and the resultant opportunity to create and select Alternatives that best meet the RAOs for all portions of the groundwater contamination, the following sections provide a summary of quantitative evaluations completed by OPOG's consultant CDM to understand the fate and transport of contaminants, using all available data.

4.0 Technical Information

As noted previously, the FEFLOW modeling completed by CH2M Hill for the OU2 RI and FS reports, which was used to support the selection of remedial alternatives, includes two assumptions that are wholly unsupportable – that contaminants released to the ground surface as early as 1976 instantaneously reached the groundwater table at a depth of approximately 75 feet below ground, and that transport of contaminants in groundwater occurred at the same rate as groundwater velocities, i.e., were unretarded. CDM has conducted analyses of contaminant transport rates. The conclusions of these analyses are (1) transport of chemicals from the ground surface to groundwater at the Omega property would take a minimum of 7.4 years, and very likely much longer, and (2) contaminant transport rates once the contaminants reached groundwater are in the range of 160 to 250 ft/yr. These conclusions are explained in further detail, respectively, in the following sections.

4.1 Vadose Zone Transport

CDM's analysis of potential transport times downward through the vadose zone utilized site-specific data from laboratory analysis of unsaturated soil samples including grain size distribution, bulk density, effective hydraulic conductivity, and moisture content collected during the Onsite Soils RI. Site data indicate that the average volumetric moisture content in the vadose zone is approximately 35 percent. During infiltration, we estimated that approximately 10 to 30 percent of this volume actually supports the movement of recharge. The hydraulic conductivity of materials in the vadose zone at the Site is low, with a geometric mean in the vertical direction of 1.83×10^{-7} centimeters per second (cm/sec). These site-specific data were used to estimate the time needed to transport contaminants to the water table from releases at the surface.

CDM used two different valid scientific methods to estimate the range of advective travel times from the ground surface to the water table, neglecting the effects of dispersion. A third method was used to apply the effects of dispersion on the previous solutions to conservatively determine the time until breakthrough to groundwater would occur.

First, using a volume balance approach based upon a recharge rate of 2.0 in/yr, 75-foot thickness of the vadose zone, and the range of effective porosity calculated above, the estimated advective travel time for a release at the surface to reach the water table ranges from 16 to 48 years.

Second, conservatively assuming a fully saturated soil in the vadose zone and unit hydraulic gradient, hydraulic conductivity, and effective porosity values noted above were used to estimate the mean travel time from the ground surface, resulting in a similar range of transport time of 14 to 42 years.

Next, an analytical transport equation was used to incorporate the effects of dispersion and calculate the time required for contaminants to reach the water table, using the range of advective transport rates calculated above. The result was a minimum of 7.4 years. This latter value is considered to be extremely conservative given the inherent assumptions that may overstate the capability of the vadose zone to transport contaminants. This analysis of vadose zone transport does not consider the effects of sorption of

the contaminants to the soil matrix, which adds to the conservatism of this worst case (i.e., fastest) estimate of transport time. However, for the sake of further analysis in estimating the extent of contaminant migration in groundwater, this very conservative value was carried forward (see Section 4.2, below).

Although it is theoretically possible that a preferential high permeability vertical flow path in the vadose zone may exist that could have transported contamination to the groundwater faster, there is no evidence of such. The apparent horizontal spreading of contaminants on top of the 30-foot unit discussed in the OU1 Onsite Soils RI supports the absence of a preferential vertical flow path. Further, there is no evidence to suggest that Non-Aqueous Phase Liquid (NAPL) pools on the ground surface existed at the Omega site. (Such evidence would clearly have been apparent in aerial photography from EPA's EMSL/Las Vegas, which have been reviewed by both EPA and OPOG.)

There is no evidence to suggest that releases to the ground surface commenced immediately in mid-1976. On several occasions, including in EPA's January 21, 2010 letter, EPA has referred to a former monitoring well as a means for accelerated transport from the ground surface to groundwater. However, as EPA Region 9 is aware, the subject well was installed in 1988 and could not have been a conduit for contaminants traveling 4.5 miles from the site. Thus, even supposing that releases to the ground surface occurred as soon as operations began at the facility in mid-1976, by applying the vadose zone analysis discussed here it can be conservatively concluded that the earliest that site contaminants reached groundwater beneath the Omega property would have been 7.4 years later, in 1984.

4.2 Aqueous Transport in Groundwater

As noted previously, CH2M Hill's FEFLOW model assumed that contaminants in groundwater migrated at the same rate as groundwater flow with no retardation. Because this assumption is invalid for many of the compounds, notably PCE, Freon 113, and Freon 11, which are universally recognized in published literature as being retarded for groundwater transport, on behalf of OPOG CDM constructed a groundwater model using MODFLOW to estimate potential transport rates and times as groundwater flows away from the Site. The objectives of CDM's work were to construct a numerical model to closely mimic the FEFLOW model documented in the OU 2 RI report's Appendix K and, using the flow model, investigate potential contaminant plume migration from the Omega site to independently evaluate the conclusions reached by EPA in the RI.

Data files from the FEFLOW groundwater flow model used for the RI were provided to CDM by EPA's consultant CH2M Hill on November 17-19, 2009. In the documentation of the groundwater model in Appendix K of the RI report, the FEFLOW model is characterized as a refinement of a 2003 USGS MODFLOW regional-scale model of the Central Basin (USGS 2003). Discretization of the USGS MODFLOW model, with uniform 0.5 mile grid spacing and four model layers is substantially coarser than the FEFLOW model. In the 13-layer FEFLOW model, lateral grid discretization in the OU2 area varies and is on the order of 10 to 300 meters in the site area.

Using the boundary conditions, initial conditions, recharge, and pumping stresses, and interpolating from the model grid provided by CH2M Hill for the FEFLOW model used for the RI, CDM constructed a numerical model using MODFLOW to represent aquifer conditions from October 1971 through September 2006. The distribution of hydraulic properties was digitized from the RI report. CDM's MODFLOW model has uniform 100 meter grid spacing and 13 layers.

CDM noted that substantial changes to the FEFLOW model horizontal and vertical hydraulic property assignments in the OU2 area had been made between the OU2 RI and FS models. Due to time constraints and the inability to directly communicate with CH2M Hill regarding the FS model, CDM relied more heavily on information provided for the RI model for this analysis. Given that the fundamental conclusions of both the RI and the FS are the same– i.e., that transport to groundwater was instantaneous at the Omega property and that the full 4.5-mile extent regional plume is allegedly attributable to the Omega property – our comments apply to equally to the conclusions of the FS.

CDM conducted a particle tracking analysis via MODPATH to estimate advective transport using the MODFLOW representation of the RI FEFLOW model. In addition to the model input and parameters used in the FEFLOW models, CDM's transport analysis considered the effects of chemical retardation. Chemical retardation values greater than 1.0 indicate that the transport of contaminants lags the velocity of water. Chemical retardation (R_f) in groundwater is both site-specific and chemical-specific. For calculating site-specific retardation factors, CDM used a total porosity of 0.38, plus bulk density of typical sand (1.65 g/cm^3) and available data for the total organic carbon from soil samples collected from the saturated zone (ranging from 510 to 2,150 mg/kg). The lower end of this range was used to accurately represent the coarser grained (sandier) media in which the OU2 plume is migrating most rapidly to estimate retardation values for PCE, Freon 113, and Freon 111. The resultant dimensionless R_f values were 1.3 to 1.6 for PCE, 1.7 to 1.8 for Freon 113, and 1.2 to 1.3 for Freon 11. Compared to published literature, all of these factors are conservatively low.

Solute transport time is a function of both the chemical retardation and the effective porosity (n_e) of the aquifer matrix. Both retardation and effective porosity affect transport times proportionally. The product of effective porosity and retardation ($n_e * R_f$) is termed "apparent porosity." The CH2M Hill FEFLOW model used for the FS applied a value of 0.30. Transport time is inversely proportional to this assignment.

Particle tracking simulations performed by CDM using an apparent porosity of 0.30 resulted in transport rate for the cited three compounds of approximately 250 ft/yr. If a PCE retardation factor of 1.6 is applied with an effective porosity of 0.30, then the apparent porosity is 0.48 and the resulting transport rate is 160 ft/yr. Using the very conservative estimate of contaminants reaching groundwater in 1984, this analysis strongly suggests that contaminants derived from the Site have migrated a maximum distance of approximately 1.3 miles by the end of 2009. OPOG recognizes that our conclusion regarding transport distances are substantially different than EPA's. We look forward to resolving these differences in a technical meeting with EPA and CH2M Hill.

4.3 Need to Consider Other Potential Sources of Freon

Clearly, the results of CDM's analysis are substantially different from the conclusions derived from CH2M Hill's FEFLOW model, where the extent of Site-derived contaminants was estimated at approximately 4.5 miles. Because EPA Region 9 adopted CH2M Hill's conclusion, due in part to the purported absence of other significant Freon sources within OU2, OPOG undertook an independent evaluation of other Freon sources. This evaluation consisted of a review of facility-specific files at the LARWQCB and DTSC, and a review of hazardous waste manifests generated by industrial facilities within the OU2 area. This independent evaluation is ongoing, but has already identified data at two sites – the McKesson facility report (Section 5.5.1.6 of the RI) and the Chrysler Nu Car Preparation facility ("Site A"; Section 5.5.1.7 of the RI) – clearly indicating the existence of other Freon sources. Pertinent data are summarized below.

The McKesson facility is located approximately 1.5 miles downgradient of the Site. EPA's RI reported maximum groundwater concentrations for Freon 113 and Freon 11 at the McKesson facility of 98 µg/L and 27 µg/L, respectively (see Figures 5-13 and 5-14 [as amended] of the RI report). The RI report, however, failed to report the historical highest groundwater concentrations for these two compounds at the McKesson facility, specifically 500 µg/L for Freon 113 and 460 µg/L for Freon 11. More importantly, these historical high values occurred in 1986 and 1994, respectively. Relative to Freon 11, groundwater concentrations of 270 µg/L were detected as early as 1990 at this facility. To emphasize the importance of these data, even if the RI and FS assumptions of instantaneous transport to groundwater at the Omega property and unretarded transport in groundwater are valid, it would still be impossible for Freon 113 Freon 11 derived from the Omega property to have reached McKesson by 1986 and 1990, respectively. Additionally, OPOG has recently located a 1985 manifest for the shipment of eleven 55-gallon drums of Freon 113 waste from the McKesson facility to the Omega facility, with McKesson as the Generator. Thus, McKesson clearly used Freon 113 at its facility as far back as 1985 and that EPA's fundamental assumption in the RI and FS reports that the Omega property is the only source of Freons and, hence, that the full extent of the 4.5-mile plume is attributable to Omega, is unjustified and inaccurate.

The Chrysler Nu Car Prep facility is located approximately 1.0 miles downgradient of the Site. EPA's RI reported accurately reported a maximum Freon 11 concentration in groundwater of 370 µg/L in 1991. Neither the RI nor FS reports, however, mention Freon 113 maximum groundwater concentrations of 1,700 µg/L in 1991. Based on all available data, contamination derived from the Omega property could not have reached the Chrysler facility by 1991. Additionally, neither the RI nor FS reports mention Freon 11 shallow soil vapor (4.5 feet below ground surface) concentrations detected at four different locations on the Chrysler facility, with values as high as 430 ppmv, further indicative of an onsite source. Again, EPA's assumption that Omega is the only source of Freon cannot be accurate.

5.0 Recommendations

As stated in the introduction to these comments, OPOG believes that the FS will be more consistent with the NCP and applicable guidance documents if the following changes are made:

- Use all available Freon data and use more reasonable assumptions for the transport of contaminants in the unsaturated and saturated zones to provide a more realistic characterization of contaminant distribution and attributable source areas.
- Once a more realistic understanding of the extent of contaminants derived from the Omega property is completed, re-evaluate the locations of regional groundwater extraction and treatment.
- Include groundwater source control at individual facilities as a part of remedial alternatives.

OPOG is confident that if the above modifications are made to the FS, the array of Alternatives and the selected Alternative will meet the NCP and CERCLA objectives of reducing the mobility and volume of contaminants, expediting the period of time for the remedy to be effective, implementing a permanent solution, and minimizing the need for long-term site management.

ATTACHMENT 2

Omega Chemical Site, Operable Unit 2,

Draft RI Report/Proposed FS Alternatives Comment Letter

To Kathleen Salyer

Dated October 15, 2009

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October 15, 2009

Ms. Kathleen Salyer
Branch Chief
U.S. Environmental Protection Agency, Region 9
75 Hawthorn Street, M/C SFD-1
San Francisco, CA 94104

Subject: Omega Chemical Site, Operable Unit 2,
Draft RI Report/Proposed FS Alternatives Comment Letter

Dear Ms. Salyer:

While OPOG has found the quarterly technical meetings with EPA to discuss the draft OU-2 RI Report and proposed FS alternatives to be very useful, we want to emphasize that there are several critical issues that still have not been adequately addressed. The following provides a written overview of these critical issues.

Draft OU-2 RI Report

The draft OU-2 RI Report concludes that the entire geographic extent of a 4.5 mile plume of contamination down-gradient from the Omega site is attributable to the releases from the Omega property. We disagree with this conclusion because the evidence in the RI itself belies it and for other technical reasons. Specifically, our major concerns are as follows:

1. The RI report assumes that contaminants migrated vertically downward 70 feet from the Omega site immediately when the site opened in 1976. In view of the subsurface stratigraphy, it would probably take several years or more to migrate to that depth.

2. The RI report assumes that there was no retardation or decay of contaminants from the Omega site during the horizontal flow of groundwater. Data within the RI report itself shows such retardation and decay is likely occurring.

3. Finally, the RI report assumes that since Freons "persist" throughout the plume, all of the plume must be tied to release of Freons from Omega. EPA itself is still continuing to look for additional Freon sources. The conclusions in the RI, therefore, are at best premature, and are likely inaccurate.

Proposed FS Alternatives

The proposed FS alternatives inappropriately evaluate only ***one basic alternative:*** pump and treat. The FS alternatives do not adequately address source containment and removal alternatives that address contamination closer to source areas. They could constitute, more technically and cost effective approaches to limiting the risks of the plume.

This failure to evaluate different alternatives for feasibility is, in our experience, unprecedented. OPOG strongly believes that the FS fails to consider feasible, appropriate remedy options which, considering the criteria of effectiveness, cost, environmental impact, energy use, flexibility, ease of implementation, and local impacts on the community, are likely to be superior to the one option EPA evaluates.

We have attached a more detailed explanation of our concerns (Attachment I), but want to clearly focus our concerns in this summary. OPOG forwards these comments because of its concerns that the failure to address each of these critical issues will make the likelihood of a PRP-led remedial action in OU-2 much less likely.

Should you have any questions, regarding the above, please contact me.

Sincerely,
Omega Chemical Site PRP Organized Group

Edward Modiano
Project Coordinator

cc: Keith Takata, EPA
Steve Berninger, EPA
Fred Schauffler, EPA
Lynda Deschambault, EPA
Gene Lucero, OPOG Member
Dave Chamberlin, CDM-consultant to OPOG

ATTACHMENT I

DETAILED SUMMARY OF OPOG'S CONCERNS WITH THE DRAFT OU-2 RI REPORT CONCLUSIONS AND PROPOSED FS ALTERNATIVES

The following document summarizes several very serious concerns that OPOG has with the EPA OU-2 Draft Remedial Investigation (RI) report completed in March of this year, and the current status of remedial alternatives proposed by EPA for the pending Feasibility Study (FS). It appears to us that EPA has not accurately considered key technical model input parameters in reaching its conclusion that the Omega-derived plume in OU2 extends approximately 4.5 miles down-gradient from the Omega site. For the reasons below, we believe that EPA's view of the extent of the plume attributable to Omega is inaccurate. We are hopeful that OPOG and EPA can initiate immediate discussions to correct what we see as serious technical concerns with the RI Report.

RI Report

In the RI report, EPA has defined a groundwater plume in OU2 that extends approximately 4.5 miles down-gradient from the Omega site. Although Sections 5.4 and 5.5 of the RI document numerous sources of chlorinated solvent contamination that contributes to the OU2 plume, the RI inexplicably concludes that the full geographic extent of the Freon plume is attributable solely to releases from the Omega property. Based on our previous discussions with EPA, OPOG understands that EPA's conclusion is based on two factors – first, that EPA has identified no significant sources of Freon other than Omega and Freon extends the length of the plume, second, that the FEFLOW model used by EPA's contractor supports such a contaminant transport distance.

With respect to the Freon issue, OPOG believes that EPA is continuing to research potential additional Freon sources to the plume. It is decidedly premature for the RI report to include such a significant, and potentially erroneous, conclusion before this investigation is completed. Indeed, OPOG is evaluating potential sources of Freon down-gradient from the Omega Site, which are likely contributing to the plume.

With respect to the FEFLOW model, OPOG understands that the FEFLOW model assumes that (a) releases on the ground surface at the Omega property in 1976 instantaneously reached groundwater 70 feet or more below the ground surface, and (b) no retardation or decay of contaminants occur as they migrate in a down-gradient direction. Both of these assumptions are scientifically invalid. In terms of release times, there is no evidence that OPOG is aware of that indicates that releases occurred as far back as 1976. More importantly, the RI provides no technical justification for how any surficial releases could instantaneously migrate vertically through a 70-foot vadose zone. At a bare minimum, we would expect the RI to include vadose zone transport estimates to support EPA's conclusion.

EPA also assumed there was no retardation or decay of contaminants as they migrate down-gradient. This is contrary to well known and peer reviewed studies which show substantial decay in chlorinated VOCs as they migrate through groundwater. In addition, the assumption that these processes do not occur is directly contradicted by data presented elsewhere in the RI. Thus, OPOG requests that transport modeling be re-performed using representative and appropriate input parameters, based on sound science. We further suggest that a more widely used model (e.g. MODFLOW) be used, so that members of the public can evaluate the results more readily.

Feasibility Study

OPOG appreciates the FS briefings that EPA has provided during the June 17th and August 31st quarterly technical meetings. Based on our understanding of the current status of the FS, we are very concerned about two issues in the FS. First, the approach chosen by EPA to have all "active" alternatives presumptively assume that the remedy will be groundwater extraction and treatment, with the only variability being the end use of the water, precludes a reasonable analysis of the range of potentially appropriate remedial actions and violates section 121 of CERCLA. OPOG understands that the primary objective of the remedy, as stated by EPA, is containment. There are clearly many different means of achieving containment and the FS fails to provide any evaluation of such options Second, EPA has acknowledged that many continuing sources of contamination may be contributing to the current mass in groundwater, yet the FS includes no alternative to address these continuing sources. OPOG strongly requests that EPA include alternatives that focus on addressing the sources of contamination. Without this, EPA is proposing remedy options that are unnecessarily costly and do not directly address the real problem. In the June 17th and August 31st meetings, OPOG proposed one such potential alternative – "hot spot" remediation in multiple contaminant source areas, coupled to migration control at the down-gradient extent of the plume. This approach would fully meet EPA's stated containment objectives, and do so in a far more cost-effective and expeditious manner than any of the alternatives currently under discussion. Furthermore, this approach would allow application of in-situ technologies at source areas, technologies that are fully proven to be more cost effective at destruction of contaminant mass than groundwater extraction and treatment.